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AUGUST 6, 1949

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE

TECHNOLOGY DEPARTMENT



Arctic Assault

See Page 84

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THE FUTURE HOLDS GREAT PROMISE

Neither chance nor mere good fortune has brought this nation the finest telephone service in the world. The service Americans enjoy in such abundance is directly the product of their own imagination, enterprise and common sense.

The people of America have put billions of dollars of their savings into building their telephone system. They have learned more and more ways to use the telephone to advantage, and have continuously encouraged invention and initiative to find new paths toward new horizons.

They have made the rendering of telephone service a public trust; at the same time, they have given the telephone companies, under regulation, the freedom and resources they must have to do their job as well as possible.

IN THIS climate of freedom and responsibility, the Bell System has provided service of steadily increasing value to more and more people. Our policy, often stated, is to give the best possible service at the lowest cost consistent with financial safety and fair treatment of employees. We

are organized as we are in order to carry that policy out.

BELL Telephone Laboratories lead the world in improving communication devices and techniques.

Western Electric Company provides the Bell operating companies with telephone equipment of the highest quality at reasonable prices, and can always be counted on in emergencies to deliver the goods whenever and wherever needed.

The operating telephone companies and the parent company work together so that improvements in one place may spread quickly to others. Because all units of the System have the same service goals, great benefits flow to the public.

Similarly, the financial good health of the Bell System over a period of many years has been to the advantage of the public no less than the stockholders and employees.

It is equally essential and in the public interest that telephone rates and earnings now and in the future be adequate to continue to pay good wages, protect the billions of dollars of savings invested in the System,

and attract the new capital needed to meet the service opportunities and responsibilities ahead.

There is a tremendous amount of work to be done in the near future and the System's technical and human resources to do it have never been better. Our physical equipment is the best in history, though still heavily loaded, and we have many new and improved facilities to incorporate in the plant. Employees are competent and courteous. The long-standing Bell System policy of making promotions from the ranks assures the continuing vigor of the organization.

WITH these assets, with the traditional spirit of service to get the message through, and with confidence that the American people understand the need for maintaining on a sound financial basis the essential public services performed by the Bell System, we look forward to providing a service better and more valuable in the future than at any time in the past. We pledge our utmost efforts to that end.

LEROY A. WILSON, President
American Telephone and Telegraph Company.
(From the 1948 Annual Report.)

BELL TELEPHONE LABORATORIES Exploring and inventing,
devising and perfecting, for continued improvements and economies in telephone service



MEDICINE

Leukemia Death Sign

Research shows there is a relationship between the amount of histamine in the blood and the white blood cell count. Death follows when the histamine is low.

► A SIGN in the blood of leukemia patients which shows up when death is near and may have important implications in the treatment and understanding of the disease has been reported by University of California Medical School scientists.

This sign is bound up in a mysterious relationship between the white blood cell count and the amount of histamine in the blood of leukemia patients. Leukemia is a disease marked by overabundance of white blood cells.

The scientists noted that in patients who are doing well there is present in the blood much more than the normal amount of histamine, a chemical present in all living cells. The overabundance of histamine was just about proportional to the overabundance of white blood cells.

They found that patients with high white cell counts who had only normal or subnormal amounts of histamine died within a month.

After this was noted, efforts were made

to stimulate formation of histamine in the blood, in hopes that this would strike the curious balance found in the more fortunate patients. Epinephrine, a histamine-promoting chemical, was used. The effort failed, but research along these lines is still continuing.

The research was reported in the NATIONAL CANCER INSTITUTE JOURNAL by Drs. Michael B. Shimkin, director of the University's Laboratory of Experimental Oncology, and Drs. Leo Sapirstein, Franz R. Goetzl, Priscilla M. Wheeler, and Nathaniel I. Berlin.

Two cases, additional to those reported in the scientific paper, illustrated how the mechanism operates.

Patient No. 1 had a white cell count of 200,000—the normal is 5,000 to 10,000. His histamine level was 400 to 700 micrograms per 100 cubic centimeters, the normal being under 10 micrograms. Radioactive phosphorus treatment lowered the white cell count to 15,000 and the histamine level to

15, and this was accompanied by a regression of symptoms.

Patient No. 2 had a white cell count of 60,000, with histamine levels of 30 to 50 micrograms. When the white blood cell count went up to 120,000, the histamine level dropped to 3.5 micrograms, and the patient died within eight days.

The scientists suggest that there is at work a homeostatic mechanism, a system of natural checks and balances by means of which the body tries to counteract its difficulties. Thus when the white blood cell count goes up dangerously, the body tries to combat it. When successful, the histamine level goes up correspondingly. Failure results in a drop of histamine and death.

The findings have suggested several new lines of research, which may yield important results in both treatment and understanding.

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GENERAL SCIENCE

Soviet Science Translated By Atomic Laboratory

► IF YOU want to know what Soviet scientists are writing about and you can't read Russian, you can get the information from the Atomic Energy Commission's Brookhaven National Laboratory, at Upton, N. Y., on Long Island.

This government-supported scientific agency is the largest distributor of Soviet scientific information in the nation. Instead of being chased by the FBI, it is winning the praise of scientists, military men and industrialists who want to know what is happening behind the iron curtain.

About September, 1947, as part of the conflict between the East and West, all Russian scientific journals stopped publishing titles and abstracts in languages other than Russian. Many of the 30 journals issued by the USSR Academy of Sciences used to have English titles and abstracts. Even the all-Russian issues are readily available outside the Soviet Union within several months of their publication, the Brookhaven authorities found. So they now issue translations of the titles of all articles in Russian scientific journals, ranging from astronomy to zoology. All physics articles, including nuclear science, are given in English abstracts. Complete translations are made of articles they consider significant, either to the atomic energy program or to science in general.

Seven issues of "Guide to Russian Scientific Periodical Literature," prepared under the direction of Prof. John Turkevich, of Princeton's chemistry department, and Dr. Ludmila Turkevich of Princeton's modern language department, have been issued.

In the science field, non-cooperation of the Soviet government through barring of English translations is being countered by this U. S. A. government effort.

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RARE MONSTER—In classical antiquity, the chimera was a fabulous monster. In modern ichthyology, chimeras still look rather that way. They are a kind of missing-link fish, midway between skates and sturgeons, with cartilaginous skeletons and (often) long, pointed snouts. This specimen, one of four dredged up at depths of from 2,700 to 3,000 feet off the New England coast by the Woods Hole Oceanographic Institution's laboratory ship, Caryn, belongs to the extremely rare species *Harriotta raleighana*.

NUCLEAR PHYSICS

Atom-Smasher Isotopes

► RADIOACTIVE isotopes—the exploding chemical elements used for scientific research—will be produced for scientists in the famed atom-smashing cyclotron, the U. S. Atomic Energy Commission announced.

These important tools of modern science have been produced in the chain-reacting atomic furnace in Oak Ridge, Tenn., and shipped to scientists for nearly three years. But use of cyclotrons will give a wider variety of isotopes than is possible for the pile.

Under this plan, the Carbide and Carbon Chemicals Corporation is authorized to purchase cyclotron time for making isotopes from institutions which have these atom-smashers. Institutions which will be utilized include the Massachusetts Institute of Technology, University of Pittsburgh, Washington University, and the Crocker Radiation Laboratory at the University of California. Assistance to the general program will be rendered by the department of terrestrial magnetism of the Carnegie Institution of Washington.

Some of the elements and their atomic weights which will be available to scientists for the cyclotron production include: beryllium 7; sodium 22; iron 59; iron 55; zinc 65; arsenic 63; and iodine 125. Only isotopes with a half-life longer than 30 days will be shipped at first. The half-life is the length of time in which the radioactivity of the isotope is diminished by half.

The AEC said that the new cyclotron-isotope program was strongly urged by the National Research Council, because of the need for the additional varieties of isotopes it can make available.

Cost of the newly-available isotopes will be higher than the pile-produced ones, so the AEC plans to subsidize the program.

As with the pile isotopes, distribution will be made free of charge for cancer research.

Processing of the isotopes will be carried on at the Oak Ridge National Laboratory.

Because cyclotrons are available in many countries abroad, the new program will be limited to the United States and its territories and possessions.

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ICHTHYOLOGY

Record Fish May Have Had Too Much Mouth

► WHEN is the mouth of a bass small? That's the scientific puzzler which may upset a world's record in fishing.

Walter Harden is credited with catching the world's record smallmouth bass, a 14-pounder, 28 inches long, in Lake Apopka, near Oakland, Fla. But two scientists now contend the fish wasn't a smallmouth bass.

Dr. Carl L. Hubbs of the Scripps Institution of Oceanography and Dr. Reeve M. Bailey of the University of Michigan have just published a study of black basses. Among their scientific observations is their opinion that Mr. Harden's record-breaker was really a largemouth bass.

It's really difficult for the average sportsman to distinguish between the two basses, the biologists point out, but some of the features which differ are the coloration, scales, body shape and, oh, yes, the size of the mouth.

"We recommend the removal of the Florida fish from consideration for the title of 'world's record' smallmouth bass," write the scientists, but they "leave to others the decision as to what fish deserves the distinction of holding the record."

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On This Week's Cover

► THIS model of the new Northrop Raider C-125 military assault transport shows it with its huge jaw-like ramp door open. This plane can be loaded with five tons of cargo in a few minutes. It has been designed to operate from small, unsurfaced airstrips by virtue of its double-slotted flaps, heavy-duty, fixed landing gear, and three engines. A total of 23 of these planes are being built for the Air Force for use in Arctic rescue work.

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ZOOLOGY

How has the African snail become a menace? p. 91.

GENERAL SCIENCE

Science Clubs Abroad

Six hundred foreign science clubs affiliated with Science Clubs of America form the nucleus for international expansion of this movement.

► GROUPS of young people will be studying and working in science in many countries during the coming school year as a result of the impetus given to international science clubs by a conference held at UNESCO, the United Nations Educational, Scientific and Cultural Organization, in Paris.

Representatives from nine nations and reports from many other areas were received during a two-day meeting (July 15-16). Leaders of science youth organizations working in many lands and languages became acquainted and exchanged experiences.

The American experience developed through years of experience with Science Clubs of America and the Science Talent Search formed the basis of the projected extension of science club work to all nations. The 600 foreign clubs already affiliated with Science Clubs of America form a nucleus for the international expansion of the movement.

In France, representatives of the national departments of education and colonial affairs, the French national radio, a leading science journal, a youth center and other interested organizations are discussing a joint sponsorship of the organization of science clubs for youth.

Czechoslovakia is planning science clubs in every secondary school during the coming year.

Denmark is expanding its youth science organizations and so is Holland.

For Latin America, UNESCO is planning a traveling exhibit to demonstrate the methods and advantages of science organization by young people.

Interest in science clubs was also reported from Poland, Switzerland, England and other nations.

Delegates and observers at the science clubs conference were presented the science Clubs of America emblem by Watson Davis, director of Science Service, who was elected chairman of the conference.

Director General Jaime Torres Bodet of UNESCO opened the conference, telling the delegates:

"Yours is the rare privilege of disseminating, humanizing and advancing the cause of science. It enables you to help train men who will be, not mere scientists, but citizens with deeper insight into the possibilities and dangers of the world today. Whether they make a name for themselves through far-famed discoveries or merely perform a more humble yet necessary task, the members of your clubs will have this

in common: They will together have fought against ignorance and prejudice, worked methodically with ever open minds, faithfully carried out their task, great or small, and with their deeper knowledge of the world about them, will better understand the bonds which unite mankind in a common destiny."

Dr. Pierre Auger, French physicist and cosmic ray authority, participated in the conference as the head of the natural sciences department of UNESCO.

Just as Science Service through Science Clubs of America supplies material and inspiration to between 12,000 and 15,000 science clubs in the USA each year, without charge, so an identical service without charge is being offered by Science Service to all science clubs, already organized or in the process of organization, in all countries.

An exhibition of science club work in various countries and a display of educational and industrial materials supplied to science clubs largely by American organizations was opened at UNESCO at the time of the conference.

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FORESTRY

Douglas Fir Bark Yields Waxes and Tannin

► WAXES for all sorts of waterproofing, and tannins for making leather, are available in large quantities in the little used bark of the Douglas fir stripped from the logs in the sawmills, a symposium on wood was told in Washington by Phimister B. Proctor of the Oregon Forest Products Laboratory. This symposium was sponsored by the National Research Council and the Office of Naval Research.

Taking part in the two-day symposium were many of the nation's experts on wood from industries, universities and the government. In spite of the development of new materials, such as plastics, wood is more important now than ever before. The scientists considered many questions relating to wood and its uses, particularly



SCIENCE CLUBS ORGANIZED INTERNATIONALLY — Dr. Jaime Torres Bodet, UNESCO director general, opens a UNESCO meeting in Paris to discuss an extension of the science club movement to all parts of the world. Left to right: B. Bendt-Nielsen of Copenhagen, Denmark; Dr. Pierre Auger, head of UNESCO Natural Sciences Department; Dr. Torres Bodet; Borge Michelsen and Maurice Goldsmith, of UNESCO; and Jouko Haavisto of Helsinki, Finland.

in connection with military and industrial requirements.

Oregon alone produces annually nearly a million tons of bark in connection with lumbering operations, and most of it is Douglas fir. Only a small amount of it is used for other purposes than for fuel. One company was reported by Mr. Proctor to be using mechanical means to separate ground bark into cork particles, needle-like bast fibers, and a fine powder. These fractions, he said, are being sold for use as ground mulches, absorbents, fillers, plastic and resin extenders and carriers of insecticidal dusts.

In addition to waxes and tannins, Douglas fir bark yields dihydroquercitin and phlobaphene. The first is a new compound and is a coloring matter similar to quercitin. Its commercial possibilities are not yet known. Phlobaphenes, because of their phenolic nature, have possibilities for use

as extenders for plastics and synthetic resins.

The total extractive content of Douglas fir is approximately 30% of the oven-dry weight of the bark. The proportions of the individual extractives are, however, found to vary with the age of the trees and the height of the bark above ground. In general, wax yields are highest from the bark at the bases of old trees. Tannins are most plentiful in the youngest bark at the tops of the youngest trees.

The extraction process is a simple one, involving no new principles and requiring no specialized equipment. A pilot plant at the Oregon Forest Products Laboratory consists of a batch extractor in which benzene is pumped through the shredded bark. From the liquid mixture obtained, the benzene and water are evaporated off, leaving the extractives.

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ENGINEERING

Rammed Soil for Building

► THE present high cost of building has aroused scientists to find new methods of construction with earth as a building material, and technical men at the Texas Engineering Station have issued a report of recent investigations relative to rammed-earth construction. It contains valuable suggestions about the types of soil satisfactory for this purpose, as well as techniques for their use.

There is nothing new in the idea of using earth as a construction material. Brick is baked earth. The adobe houses long used in the world are sun-baked brick. The so-called mud-stick homes of early American Indians were made of adobe material plastered on the inner and other sides of a stick framework to form a house. The outer houses of pioneer days on the prairie are examples of earth dwellings. The rammed-earth construction is merely another type of structure using earth for its sidewalls. In it, earth is tamped within temporary forms similar to those used in concrete construction.

At a time when construction costs are almost prohibitive to the middle and low income groups, rammed earth offers durable construction at minimum cost, the report states. For a building that costs less to heat, or cool, has very low insurance rates, requires little maintenance, is insect- and vermin-proof, lasts indefinitely, is soundproof, strong, and has architectural beauty, its use should not be overlooked.

Soils that are satisfactory for buildings can be found in nearly all parts of the world, or can be made up by mixing nearby soils. The investigations show that a suitable soil is one predominantly sand with sufficient silt and clay to serve as a binder or natural cementing agent. The most favorable mixtures are 70% to 80% sand and

the rest silt and clay. All organic matter, such as grass roots, should be removed, and the larger stones as well.

With certain soils, it is advisable to add a special binder such as vinsol resin, portland cement, or a mixture of the two. In most cases of rammed-earth construction, however, it may be more efficient and economical to use no admixtures whatsoever, but to add a weather-resisting outer coating, according to Edsel J. Burkhart of the Station staff. Asphalt, paints, and portland cement stuccos were all tested, as well as special commercial products prepared for the purpose.

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BACTERIOLOGY

Penicillin in Cows' Milk Checks Cheese Formation

► PENICILLIN can make trouble for the manufacturers of certain types of cheese, Drs. H. Katzenbach and E. G. Hood of the Canadian Department of Agriculture point out in the journal, SCIENCE (May 13). Cheddar cheese, for example, is produced by the bacterial fermentation of milk. When cows have been treated with penicillin to cure mastitis, a bacterial inflammation of their udders, enough of the drug may carry over into their milk to kill or inhibit the useful, cheese-forming bacteria.

Drs. Katzenbach and Hood carried out a series of experiments in which penicillin was added directly to milk that had been inoculated with the cheese-making bacteria. Above a certain low concentration, the drug stopped the cheese-forming action.

It was possible, however, to offset the effect of the penicillin by adding also an appropriate quantity of penicillinase, which

is an enzyme that destroys penicillin. The two Canadian scientists suggest that this precaution be taken by cheese producers when they are using milk from penicillin-treated cows.

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WILDLIFE

Blame Fox for Trying, Not for Succeeding

► FOXES eat few birds. It's not that a fox doesn't try; he simply can't catch many.

Exaggerated claims that foxes are responsible for the scarcity of game birds are hit by Dr. W. J. Hamilton, Jr., Cornell University zoologist.

"Few birds are taken," says Dr. Hamilton, "but this is not because the fox is not fond of them. They are not as easily caught."

The scientist has examined the stomachs of more than 1,000 specimens over the past 20 years. He found the fox's food during spring, summer, and early fall includes various fruits and berries and chokecherries, and for animal foods, woodchucks, cottontails, and especially field mice. Chipmunks and other small mammals are also included in the prey of the fox.

Winter food is primarily cottontail rabbits and field mice, with some frozen fruit included. A fox will often dig into the snow to get frozen apples.

"While fond of grouse and pheasant, the fox finds it easier to dine on chipmunk. Not only are the chippies more numerous, but they cannot take to the air as the game birds do when pursued."

Though the fox may destroy a few grouse, he actually is an asset to the grouse through his destruction of the more potentially dangerous chipmunk, which is a predator of grouse, Dr. Hamilton pointed out.

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PHYSIOLOGY

The Joint Is Cold, Knee Joint, That Is

► IT'S NOT "cold shoulder," but cold knee. Measurements made with a new electric thermometer of the knee joint temperatures of two men gave readings of 90.3 degrees Fahrenheit and 91.2 degrees. Normal body temperature is usually considered to be in the neighborhood of 98.6 degrees.

The temperature of the knee joint is taken by threading a tiny bit of a thermistor through the joint with a hypodermic needle. Dr. J. M. Benjamin, Jr., of the University of Pennsylvania's graduate school of medicine and Steven M. Horvath of the University's Moore School of Electrical Engineering made the experiments, which are reported in the journal, SCIENCE (June 10).

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MEDICINE

Isolate Live Cancer Virus

Freezing of cancer tissue has liberated a potent cancer virus which infects the chest tissue of mice, British scientists reported.

► ISOLATION of live cancer virus from infected mice was announced in the BRITISH MEDICAL JOURNAL (July 30).

The virus produces cancer only in the chest or mammary tissue. American scientists have shown that it can be transmitted through the milk of nursing mice to their young. However, the chemical oestrin had to be present to make the virus potent.

In these experiments, reported by Dr. Ida Mann of the Imperial Cancer Research Fund, London, the active virus was freed from the cancer tissue by freezing it to 110.2 degrees below zero Fahrenheit.

Injections of this liberated virus into male and female mice produced tumors only when injected into mammary tissue, Dr. Mann said. She pointed out that this was not a transplantation since the number of tumors increased the longer the tissue was frozen. Also, living tumor cells can be grafted on any part of the body and will grow while the virus infects only chest tissue.

The technique used was to mince the tumor tissue removed from cancer-infected mice and then store it in a deep freeze. Refrigeration destroys the tumor cells and liberates the virus. Dr. Mann accounts for this by stating that cold breaks down the inhibiting factor which holds the active virus in check. Moreover, the virus becomes more deadly the longer it is kept in the freezer during the first 48 hours.

GENERAL SCIENCE

New Suits for Amputees

► ZIPPIERS with large rings, buttons attached to a long stem, and pockets that are tacked down and entered at a slant are some of the new features which have been adopted in a special type of suit for amputees.

Dressing has been one of the big stumbling blocks to GI amputees, so the clothing

Freezing has little effect on it after this time.

Dr. Mann, with the aid of William J. Dunn, was also able to produce breast cancer by drying the virus after it had been frozen and injecting it into the breast of male and female mice. This experiment was based on the work done by Dr. Mann's husband, Dr. W. E. Gye, director of the Fund.

American cancer authorities questioned in Washington said the evidence that English scientists have successfully isolated cancer virus is "not convincing."

The scientists asked not to be identified as they have not had a chance to fully evaluate the study. But they pointed out that freezing, the method used in the English experiments, has not been accepted in the past as proof of virus isolation.

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branch of the Air Materiel Command's Aero-Medical Laboratory at Wright Field, Dayton, O., designed the new suit at the request of the Veterans' Administration.

The new features are all skillfully concealed and the suits look exactly like the well-draped style at present in vogue. But for the amputee, the new suits have these additional advantages:

For arm amputees the suits have wide shoulders and fuller sleeves to conceal the artificial arm. To prevent wear and tear on the material, invisible reinforcement patches have been added at the elbow and leather reinforcement inside the cuffs. Pockets on the coat are lower and are entered at a slant. They are wide and shallow and taper at the bottom so that the contents fall into one place.

Buttons are on a long stem which can be closed with a specially designed button hook, or they can be attached only as trimming and the coat fastened with a modified slide fastener.

Trousers for leg amputees are fitted with an inner lining reinforcement extending from the pockets to below the knees. Studs are fastened to the inner waistband of the pants that fit sockets on shorts so that both can be removed in one operation.

Additional features include a loop inside cuffs so that sleeves will not be pushed up when an overcoat is put on, and the coat collar is tacked down to prevent it from turning up.

Patterns in the proper sizes for suits with these features can be obtained by amputees from the Veterans' Administration in Washington.

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The mineral-containing tropical *mankablik wood* is so refractory that it dulls ordinary woodworking tools within a few minutes.



SCIENCE KITS AT UNESCO—Experimental material on Soilless Gardening developed by Science Service is inspected at the Science Clubs International Exhibit, Paris, by Dr. Jaime Torres Bodet, director general of UNESCO (left), and Dr. Pierre Auger, head of UNESCO's Natural Sciences Department.

ENTOMOLOGY

**Spiders' Blood Pressure
About Same as Humans'**

► BLOOD pressure in spiders is about the same as it is in human beings, reports Dr. H. Homann of the University of Goettingen, Goettingen, Germany. But whereas a sudden doubling of blood pressure in a human being would be a most alarming symptom, in spiders it is a perfectly normal event, occurring whenever a spider sheds its old skin and emerges in a new one.

The spiders studied by Dr. Homann found it necessary to shed their skins whenever their weight doubled—ordinarily about four times in a lifetime. He weighed his spiders on a very simple spring scale of his own devising; it consisted of a single slender glass filament which indicated the small weight imposed on it by the degree of bending.

Blood pressure was measured by four different micro-methods equally ingenious. Two of them involved removing one of the spider's eight legs. That, however, did not bother the spider; loss of a leg is a commonplace matter to arachnids, and they grow a replacement by the time the next skin-change is due.

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GEOGRAPHY

**Newly Named Peak Honors
Artist-Photographer**

► A NEW name has been added to the official map of the West: Jackson Peak, a 13,400-foot mountain in Wyoming's Wind River range. The name was bestowed in honor of the late William Henry Jackson, pioneer artist and photographer of the West.

In 1866, Mr. Jackson made sketches in the Rocky Mountain region, from which notable paintings were later completed. In 1870, he was with the Hayden expedition to the Yellowstone, as official photographer. In 1935, when he was past 90, he painted a series of four panels in the Department of the Interior building.

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MATHEMATICS

**Millionth of an Inch
Measuring Device Needed**

► IF YOU want to do something big in a small way, here's your chance: develop a device for measuring down to a millionth of an inch or less.

Despite all the instruments scientists have for making ultra-fine measurements, they still need more, declares Dr. Haakon Styri, director of research for SKF Industries, Inc.

"New and better types of gauging equip-

ment to make fast and accurate checks of the finer tolerances toward which industry is constantly advancing are in greater demand now than ever before," he explains.

A few decades ago, accurate measurements down to a ten-thousandth of an inch were considered the ultimate. But today, these measurements are made down to a few millionths, and industry would like to make them even smaller, Dr. Styri says.

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BOTANY

**English Garden Planned
For Blind Visitors**

► NEW aid to pleasure for the blind is a garden for the sightless in Sunderland, England.

It has special four-inch curbs to guide the feet of blind visitors along the paths, and metal tags in braille identify the flowers and other plants.

Science News Letter, August 6, 1949

ZOOLOGY-PSYCHOLOGY

**Company of Other Dogs
Improves Pups' Appetite**

► PRESENCE of his brothers and sisters around the dinner plate improves the appetite of a puppy.

This was found in tests conducted at the Division of Behavior Studies of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine.

The amount of food eaten by each of 10 puppies was measured when they ate alone and when they ate with their litter mates all around the same dish. Four of the puppies in one litter were young of a Chow father and Basenji mother. Six were from another litter and the result of a cross between an Irish Terrier and Dachshund.

The Chow-Basenji puppies ate 14% more when they had company than when they were solitary. The Terrier-Dachshunds ate 51% more with company. Company is more important to the appetite of some dogs than of others. The increase of amount eaten for individual dogs varied from 3% to 86%.

No barking, growling or fighting occurred around the family dinner table.

The tests were made at the time of the dogs' regular morning meal of ground boiled horse meat mixed with dog meal, milk, pablum and vitamins. The food was given to the dogs in a large pan, big enough to provide comfortable access by all the dogs in the litter.

Details of the experiment are reported in the *JOURNAL OF GENETIC PSYCHOLOGY* (March), by Drs. Sherman Ross and Jean Goodwin Ross, of Bucknell University, Lewisburg, Pa.

Science News Letter, August 6, 1949

IN SCIENCE

ARCHAEOLOGY

**"K Ration" of Ancient
Greeks Was Pill-Sized**

► THE K ration of World War II may have seemed a dreary repast to the average GI, but to the soldiers who fought wars from the days of ancient Greece to the sixteenth century it would have been a king's banquet.

Consider the "K ration" developed and prescribed by an ancient Greek army engineer and supply officer, Philon of Byzantium, in the year 150 B. C.

Actually, this "K ration" was a pill about the size of an olive, made up of a mixture of sesame, opium poppy, honey and squill.

The GI of old—and the citizen of besieged cities as well—was allowed one such pill at 8 a.m. and another at 4 p.m. Philon wrote that this diet prevented any "serious suffering from want of food."

An account of the use of the pills is revealed by Dr. Pan S. Codellas, of the University of California Medical School, in the *BULLETIN OF THE HISTORY OF MEDICINE*.

Dr. Codellas relates that there was an even fancier "K ration" pill recommended by Philon. Almonds were added to the ingredients of the first pill. Philon said this one was "good for armies, for it is pleasant, filling and does not cause thirst."

Dr. Codellas said the ancient "K ration," which found favor as late as the sixteenth century, packed quite a nutritional wallop. Honey provided carbohydrate, sesame provided protein, the squill was a general tonic, and the opium deadened hunger pains.

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WILDLIFE

**Study Shows That Deer
Are Highly Prolific**

► ONE explanation of the rapid comeback deer are able to stage when they are given protection and a good range was placed before the meeting of the American Society of Mammalogists in Washington by Dr. Ralph S. Palmer of Vassar College. Twins and triplets are commonplace among them, and a doe may have her first fawn when she is herself only a year old.

Dr. Palmer cited the record of one tame, though unconfined, doe in Maine: She was born in 1934 and had a single fawn in 1936. Kept under observation through 1948, she was known to have borne seven sets of twins and four of triplets, in addition to two other fawns that failed to survive—a total of at least 29 offspring.

Science News Letter, August 6, 1949

SCIENCE FIELDS

ETHNOLOGY

New Version of Iroquois "Constitution" Found

► A NEW version of what was perhaps the first "Constitution" of a government in the New World, a sort of Indian Magna Charta, has been traced to its source by Dr. William N. Fenton, Smithsonian Institution ethnologist.

Dr. Fenton studied microfilms of the document in the library of the American Philosophical Society in Philadelphia. The original copy of the document was loaned to the society and has since been returned to its Indian owners on the Grand River Reservation of the Iroquois in Ontario, Canada.

This copy of the "epic of the Iroquois," Dr. Fenton found, is a fairly recent one. It was produced by an educated Mohawk Indian, one Seth Newhouse, about 1885. The Indian ethnologist worked with scientists at the reservation and wrote his version of the document under his Indian name, Dayodekane.

The epic tells of the legendary Iroquois lawgiver, Degandawida, and the wanderings of his disciple, Ayonwhatha, better known as Hiawatha. Degandawida, as founder of the famous five nations of the Iroquois, is credited with developing one of the great original political systems of the world.

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NUCLEAR PHYSICS

Static Fighting Device Called Radiation Hazard

► A WARNING regarding the proper use of static eliminator devices made of polonium, a highly radioactive metal, has been issued by the Atomic Energy Project at the University of California at Los Angeles.

Dr. Fred Bryan and Louis Silverman of the U. C. L. A. Medical School atomic research group, pointed out that serious radiation hazards may develop in the area around the devices.

Polonium is used in eliminating static electricity produced by belts and pulleys, paper passing over metal rolls and film over metal and plastic rolls. This radioactive metal emits alpha particles to form a conductive layer of ionized air between the dielectric material and a portion of the machine which is grounded.

A survey of certain industrial plants in the Los Angeles area revealed dangerous radioactivity in shelves and closets in which static eliminator devices were stored. Hands of an employee who handled the equipment

were found to be highly contaminated even after repeated washing with soap and water.

The radiation of polonium, Dr. Bryan pointed out, does not penetrate the skin, but an internal hazard may develop from radioactive particles absorbed by inhalation or hand-to-mouth contact.

He recommended that static eliminators be used only when suitable monitoring instruments are available and personnel properly trained to handle radioactive material.

Dr. Bryan declared also that a recently marketed brush, utilizing polonium strips for removing static charges and dust from film and phonograph records, poses a similar problem in homes where it is used.

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PLANT PHYSIOLOGY

Temperature Affects Rate Of Plant Killing by 2,4-D

► TEMPERATURE has a good deal to do with 2,4-D's effectiveness as a plant killer. Dr. Sally Kelly of the Vassar College botany department sprayed the chemical on leaves of three species of test plants—kidney bean, perennial rye and crab grass—at three temperatures, 41, 59 and 77 degrees Fahrenheit, under greenhouse conditions.

At the highest of these temperatures results were prompt and definite, but there was a decided lag at the two lower temperature ranges. When plants that had been sprayed at the lower temperatures were moved into the 77-degree room a week later, the killing effect immediately began, even though the leaves had been well washed with water before the transfer was made.

Details of the experiment are given in PLANT PHYSIOLOGY (July).

Science News Letter, August 6, 1949

BOTANY

New Strawberry Variety Said To Have "Wild" Taste

► IF YOU are one of the legion of strawberry fanciers who yearn nostalgically for the berries of yester-year, "that tasted like something", your deliverance may be even at hand. A new variety of strawberry has just been patented that is stated to have that old-fashioned wild strawberry flavor, with clear red color throughout and no tough, tasteless core.

Advantages are claimed from the grower's viewpoint, too: the fruit stems are strong and upright, making picking easier, and the plant is resistant to leaf spot.

The new variety was originated by the late Harlow Rockhill of Conrad, Iowa; plant patent 854 has therefore been issued to his executor and trustee, Robert A. Rockhill of Marshalltown.

Science News Letter, August 6, 1949

MEDICINE

Anti-Allergy Drugs Are Causing Serious Reactions

► EVIDENCE of serious reactions and even one death due to some widely used anti-allergy drugs has been presented in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (July 23).

Death resulted in a 16-month-old girl who was poisoned by accidentally swallowing an adult dose of a compound with the trade name of Thenylene hydrochloride, according to Drs. Hugh F. Rives, Berl B. Ward, and M. L. Hicks of Dubuque, Iowa.

This drug, and the others which gave severe reactions, are antihistaminic compounds used to check the action of histamine, a poison released by body tissues in allergic reactions. There are many on the market widely used for such allergies as hay fever, hives, and skin inflammation caused by reaction to drugs. Some have even been used to treat colds.

Unfavorable reactions occur in from 25% to 65% of the patients treated with antihistamines, the physicians stated. Reactions are in the form of drowsiness, vomiting, diarrhea, headaches, nervousness, fainting spells, severe prostration and mental upsets.

Irritation of the brain seems to be responsible for these reactions, the report indicates. The physicians add that there is no effective antidote for these drugs. If the patient exhibits toxic reaction to the drugs, their administration should be stopped immediately and the individual symptoms should receive treatment.

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ASTRONOMY-ENGINEERING

New Instrument May Give Moon Trip Information

► A NEW device to help discover the "kind of things a man on a trip to the moon would need to know" is being developed by scientists at the Armour Research Foundation of the Illinois Institute of Technology in Chicago.

A metal sphere containing scientific instruments and designed to be hurled from a high-speed rocket at an altitude in the neighborhood of 70 miles over the earth was described by Dr. Severin Raynor. He said that the work on the upper-air research instrument is being supported by the Air Materiel Command, U. S. Air Force.

Heat measuring equipment, cameras to record readings from the equipment, and gyroscopes to stabilize the flight of the sphere, will be inside the new device which is nicknamed "cannonball."

A radio transmitter on the camera will help in tracking its flight to earth when the sphere drops, and a parachute device is planned to enable scientists to get the valuable film record made by camera.

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ENGINEERING

Hunt for New Power Sources

Threat of natural fuel exhaustion in the future is spurring scientists to search for new sources of power in atomic energy, solar energy and the tides and winds.

By A. C. MONAHAN

► THE future of the present machine age demands new sources of power. There is fuel enough for the needs of today, but all are agreed that the supply of the natural energy-producing fuels may some day be exhausted. This is particularly true for the liquids that power such mobile equipment as automobiles and airplanes.

Scientists are already busily engaged in a search for new fuels and for fuel substitutes. Research is directed toward atomic energy, solar energy and the now-wasted power in tides and winds. There is coal enough to last for many centuries, although the better and more desirable grades may be exhausted much earlier. It is anybody's guess how long man will be able to get crude oil or natural gas from the crust of the earth. Wood will always be available if proper forestry practices are followed.

But it is certain that new sources of power will be needed for future years, and are needed even now so that present fuels can be made to last as long as possible, particularly for specific applications.

Coal Supply

While it is true that the United States has a greater supply of coal than most nations of the world, this fuel can not be used directly to power the 40,000,000 motor vehicles on its highways or the many thousands of planes in the air. These require a mobile source of power, such as is available from liquid or gas-burning internal combustion engines.

These are dependent largely on liquid fuels, mostly petroleum products, although alcohol and other chemicals might be used. It is important that practical methods be developed as rapidly as possible to make liquid fuels from coal, shale oil and tar sands to conserve the underground petroleum which made the automobile age and the air age possible.

Atomic energy has been widely talked about as power for aircraft in the future. Early applications need not be expected. But atomic energy as a source of power for aircraft promises achievements unobtainable with standard fuels, a scientist-engineer working on the problem recently stated.

From results already obtained in reactor development, an atomic scientist recently said, "we should be able to design full-scale reactors, atomic-energy devices, to produce electric power in quantity. It is by no means clear at present how long this will

take, but I believe that it should be within eight or ten years." The statement was by Dr. Robert F. Bacher of the U. S. Atomic Energy Commission.

"The real problem in developing nuclear reactors as a source of energy for the future depends, not upon the availability of raw material, but rather upon the two-stage process of first making this production of energy technically feasible and then trying to make it economically feasible, he stated. Whether or not it will become economically feasible is the real question. I believe," he added, "that the long-range future for the development of atomic energy is very promising."

Although electricity is primarily for stationary plants, it is widely used in portable machines ranging from household egg-beaters to powerful drills used in mining. These applications, however, require wire connections to powerlines and are usable only within the length of the connecting wire. They are not for mobile units such as the automobile or the aircraft.

Most electrical energy produced in the world today comes from fuel combustion. The other great source is from water power. There is still plenty of undeveloped water power in the United States, and engineers predict large developments within the next generation or so. Some say that the amount available could easily be increased at least tenfold. But, hydroelectric energy can never fill the total of America's power needs.

Electrical Energy

Many of the sites suitable for the development of water power with which to make electricity are entirely unsuitable for industrial activities. The terrain of the land may be responsible, but more often it is the distance from raw materials and markets. Electrical energy, of course, can be transmitted by wire relatively long distances, but the cost of transmission equipment is high, the loss of power is great, and there is a practical distance beyond which transmission is uneconomical.

Direct power from the sun, and power from the tides and wind, are proposed as possible sources for energy little used at the present time. Solar energy seems to hold the greatest present interest. It is widely used now, but it is not the daily energy reaching the earth in the rays of the sun. It is solar energy stored up decades and centuries ago in the wood that is burned, and the sunlight that grew the vegetation

millions of years ago that provides the coal and petroleum of the present.

Waterpower might also be regarded as a source of indirect solar energy. Water in its travel circuit is converted to a vapor on the surface of the earth, lakes and seas largely by the energy of the sun. It drifts in clouds over the land, and the part that falls as precipitation on the highlands is the water available for power. What the scientists are now trying to do is harness the energy of the sun for direct and immediate use.

Solar Energy

There is far more effort being devoted today to the direct utilization of solar energy than is generally appreciated. Present experimental work is largely for house heating, to save other fuels, and to gain experience for later application of sun heat to power plants. By the use of large double glass windows on the south side of a building, interiors are now being kept comfortably warm during sunshine and early evening hours. The problem is how to store up the heat of the sun for use at night and for cloudy winter days. For power applications this captured heat will have to be concentrated.

Scientists at the Massachusetts Institute of Technology are trying several storage systems. In a dwelling completed early this year, water is used for heat storage. In a



SEARCH FOR NEW ENERGY—
This modern windmill near Rutland, Vt., a Smith-Putnam wind turbine, is being studied for possible unused source of power.

dwelling erected even earlier, and now in use, a chemical is used for the purpose. Glauber's salt is satisfactory for the purpose. This is a common substance, a form of sodium sulfate. Storage in iron, marble, concrete and other materials has also been tried.

The house with the sun-heated water is an ordinary one-story building with five rooms, except for its roof structure. The south slope of the roof, with the heat collector, inclines 57 degrees with the horizontal, presenting 400 square feet on which the rays of the sun are received. Their heat passes to a tank of water. When warmed by the sun, the water is pumped to a storage tank, and from there to room radiators as needed.

The principle behind the use of Glauber's salt, or certain other chemicals, makes use of latent heat, or what is now more commonly called heat-of-fusion. It is the heat necessary to convert a substance from a solid to a liquid state, and is not evident in a temperature raise. It takes as many calories of heat, for example, to change ice into water as it does to raise the temperature of the resulting water up to about 175 degrees Fahrenheit.

The system of heat storage in a chemical used in the M. I. T. experimental house is largely the work of Dr. Marie Telkes of the Institute staff. The chemical is sealed

in containers. There is no loss of the material. Glauber's salt melts at about 90 degrees Fahrenheit. This is low enough to result in liquefying when the rays of the sun are focused on it, even in winter weather. When heat is needed in the house, air from the rooms is circulated about the sealed containers by use of a fan or blower.

The same research that has developed the best types of propellers for airplane propulsion has been applied to windmill blades to capture the greatest possible amount of the energy of the wind. Also blades have been developed to operate when the air movement is very low. Considerable success has been obtained. Windmills of the future may play an important part in generating electricity to supplement energy from waterpower and other sources. The supply delivered will be erratic, depending upon the winds. Wider use of windmills in farm pumping and operating generators to feed storage batteries may be expected.

Tidal power has been used for many years in various parts of the world. It is regular and reliable, but there are relatively few sites where the tides are high enough to produce economical power. The high tides on New England's rocky coast can produce power to drive electric generators. To use them or not is largely a question of economics.

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in this country it will not be an unlimited calamity. The snails are definitely warm-climate animals, and are exceedingly unlikely to become established where freezing weather is an annual occurrence. But they can do a vast amount of mischief in the warmer parts of the United States.

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ENGINEERING

Flywheel Tire Tester Used For Plane Landings Study

► A BIGGER and a better flywheel tire tester for use in determining what happens to the tire on a speedy plane when it hits and rolls on the runway, is to be installed at Wright Field, Dayton, O., soon by the U. S. Air Force. It is what might be called a small-space apparatus that eliminates the need for testing by actual plane landings.

The flywheel to be used is seven feet in diameter and three feet wide. It is to be installed in a fixed base and rotated by electric controls at speeds up to 250 miles an hour. Similar equipment already in use has a maximum speed of 200 miles an hour.

In use, the wheel is stationary except for its high speed of rotation. The tire to be tested is mounted on a separate shaft. After the flywheel has reached the desired speed, the tire is moved against it. The tire will get the same initial shock as it would get on a plane in landing on a runway. Slowing down the flywheel speed gives the same effect as a pilot applying the brakes, and the tire gets the same wear.

The flywheel is under construction at the Adamson United Company, Akron, O., and the 150-horsepower electric motor and the necessary controls will be built by Westinghouse Electric Corporation, Pittsburgh, Pa.

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AGRICULTURE-CHEMISTRY

Corn Hybrids Differ In Resistance to 2,4-D

► THE common weed-killing chemical, 2,4-D, is more injurious to some varieties of hybrid corn than to others, it has been shown by recent experiments conducted at the Iowa Agricultural Experiment Station by Elmer C. Rossman and David W. Staniforth. As the use of 2,4-D increases this may become an important factor to consider in selecting hybrid corn varieties for planting.

Contrary to common popular opinion, 2,4-D may injure corn and other members of the grass family, although in the doses ordinarily used it will not kill them. In the Iowa experiments the 2,4-D caused reductions in the yield of corn, a reduction in the number of brace roots, defective tassel formation, and a larger number of weak seedlings when the grain from the treated corn was planted.

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ZOOLOGY

War on African Snail

► EVEN before the giant African snails made their recently reported landings on the American west coast, scientists had begun battle against them. The Pacific Science Board has sent two men into the trusteeship area of Micronesia in the mid-Pacific to carry on a four-months' study of their life-history and ecology, as a basis for future campaigns aiming at their elimination. This team consists of Dr. A. R. Mead of the University of Arizona and Dr. Hoshio Kondo of the Bishop Museum in Honolulu.

A husband-and-wife team, Dr. and Mrs. F. X. Williams, has already been in the East African region that is the snails' natural home, seeking natural enemies that may be introduced into snail-infested areas to carry on biological warfare against them. One of these, a big, hungry black beetle, seemed quite promising at first; but it now appears most likely that the big snail's most effective enemies are two other snail species, both of them fiercely predacious—the leopards of the African snail world.

The huge snails, which attain an overall length of more than seven inches, were carried to all the islands of Micronesia held by the Japanese under the old League of Nations mandate. They were used for food, also chopped up to feed to chickens. Most of the Japs didn't really like them,

however, declares Dr. R. Tucker Abbott, malacologist of the U. S. National Museum. They ate them all right, "but with wry faces," he says.

Their presence in the Hawaiian islands is traced to this food use by Japanese. At least two importations were made by ordinary mail, and the snails kept as penned animals to be killed and eaten as wanted. As soon as the territorial authorities learned about it they swooped down on the snail-pens and tried to make a complete kill. However, some of the creeping mollusks escaped, and Hawaii now has a major snail pest to contend with.

There is nothing in American law or postal regulations to prevent free shipment of any kind of snails. The European edible snail featured by French restaurants, for example, can be shipped without hindrance. It makes American pest fighters uneasy, but unless there is legislation on the subject they can do little to stop the traffic.

There may be colonies of the giant African snails in an unknown number of places in this country because of this situation. One is definitely known about: it is maintained by 90-year-old Prof. E. A. Andrews of the Johns Hopkins University, for the purpose of scientific study. He feeds his slow-moving pets on lettuce.

Even if the African pest gets out of hand

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PSYCHOLOGY

Study Minds To Check War

► YOU, and what is in your mind, are a part of a new effort to solve the vital, age-old problem of preventing war.

This newest project to combat wars of the future is being undertaken by the United Nations Educational, Scientific and Cultural Organization in Paris. Piloting this UNESCO study of war prevention is an American psychologist, Dr. Otto Klineberg of Columbia University.

If you don't want war, you probably agree with most of the people in the world. But do you ask, "Will war come?" or even "When will war come?"

Dr. Klineberg cautions "People who are hopeless and apathetic about the future are doing nothing, just waiting for what may come because they feel helpless."

This feeling of helplessness "even affects men in high places who might be able to do something about it," he warns.

"Almost nobody," complains Dr. Klineberg, "is saying, 'Can we do anything to keep war from coming?'"

The psychologist explained that "a lot of science and common sense" is being used by UNESCO to tackle the problem of war. He described the UNESCO war prevention study as a guest of Watson Davis, director of Science Service, on Adventures in Science, heard over the Columbia network.

You are a part of this study because "leaders must have followers" and "people

as well as politicians and generals are important" in war.

"We must know what is in the minds of people as well as the minds of the leaders," emphasizes Dr. Klineberg.

To find out about that, UNESCO is sending specialists in many different fields into different countries to make studies of what it is in the way of life that makes one nation different from another. Scientists from UNESCO are going into small communities in France, India and Australia to study the people in these different nations.

Tourists, Dr. Klineberg believes, can help solve international problems.

"If we could get enough people to travel in other lands," he speculates, "they would understand that other people are different and why they are different, and that in itself might develop friendly relations."

Public opinion surveys of attitudes toward foreigners are being used, and even children are quizzed, by using sentence completion games to reveal their attitudes.

Other studies underway or planned will include legal systems, textbooks, newspapers, magazines and movies.

From this mass of data, scientists will get a better picture of what the people of a nation think of the peoples of other nations. And this, Dr. Klineberg points out, will provide a good start for improving international relations.

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AGRICULTURE

Suspend Research Journal

► ANOTHER casualty produced by an "economy" drive has come to light in the forced suspension of the JOURNAL OF AGRICULTURAL RESEARCH, the last issue of which has just been distributed. The cover bears the terse message: "A shortage of operating funds has forced the discontinuance of this journal. This is the final number."

The JOURNAL OF AGRICULTURAL RESEARCH,

which the U. S. Department of Agriculture has published for a good many years (the current volume is numbered 78), does not get read by many farmers. It is primarily a publication for scientists; but for intensely practical scientists. It might be likened to a military publication that does not get read by anybody but commissioned officers, but which does give majors and colonels and generals indispensable information on how to fight. The information in its undisguisedly technical language eventuates in sprays that kill bugs and check disease fungi, in better ways to plant seed and fertilize the soil, in less wasteful and more profitable methods of getting products to market.

Lead-off article in this swan-song number, for example, is a detailed description of a method for forecasting the likelihood of late-blight disease outbreaks in potatoes and tomatoes, such as scoured the eastern part of the country last year. Application of this method should enable farmers to prepare spraying campaigns when they are likely to be needed, and (of equal im-

portance) to spare the outlay for spraying machinery and chemicals when spraying will not be necessary. (There's no use shooting at an enemy that isn't there.)

Of the 15 articles in this final number, eight have to do with plant diseases and their causes, one with an animal malady, two with the newer insect sprays, and one each with molds on wood, seed formation in sorghum, tobacco seedlings and the cooking of potatoes. If there's any boondoggling here it is difficult to detect.

Already letters of protest over the demise of the Journal have begun to roll in, and there is some discussion of the possibility of a resurrection. At best, however, publication could not be resumed for at least another year. And in the meantime there is an empty spot in the national scientific information front, with nothing to fill it.

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SAFETY

Highway Safety Group Asks For Vehicle Improvements

► CONTINUED improvement in motor vehicle brakes, headlights, driver vision, directional signals, tires, wheel rims and bumpers was urged by the President's Highway Safety Conference. These items are essentials in highway safety, the preliminary Action Program of the conference stated.

Wanted also is the modernization of principal streets and highways. To them should be applied the standards, policies and guides developed by the American Association of State Highway Officials, the U. S. Public Roads Administration and other appropriate agencies. Secondary roads should be improved to standards adequate for safe year-round use.

Other recommendations in the Action Program include the elimination of railway-highway grade crossings on priorities determined on the basis of hazard and economy of operation. Adequate protection should be provided where grade-separation structures are not feasible.

Highways to be safe for year-round travel are best if they have skid-resistant surfaces, smooth, usable shoulders and adequate drainage. With highways used by pedestrians, sidewalks are desirable. Highway lighting is a safety measure on main urban streets and on the more hazardous sections of rural traffic routes.

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● R A D I O

Saturday, August 13, 3:15 p. m., EDST

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Arthur Goldschmidt, special assistant to the Secretary, Department of Interior, will discuss "International Cooperation in Natural Resources."

SCIENCE FILMSTRIPS

PHYSICS
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MICROBIOLOGY
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LABORATORY SAFETY
HOW TO STUDY
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599-S SUFFERN, N. Y.

GENETICS

Politics, Science at Odds

American biologists believe opposing views on Mendelian genetics taken by Soviets represent a conflict between politics and science.

► SOVIET science leaders' attack on Mendelian genetics, considered valid in the Western world, "does not represent a controversy of two opposing schools of scientific thought. It is in reality a conflict between politics and science."

This is the declaration of the Governing Board of the American Institute of Biological Sciences, a coordinating organization in which all leading American biological societies participate. The Board's conclusion was reached after consultation with the executive committees of the two societies most directly concerned: The Genetics Society of America and the American Society of Human Genetics. The full statement is published in SCIENCE (July 29).

After reviewing how the official Soviet position was arrived at by methods essentially political rather than by impartial examination of all available facts, the Board comments:

"The progress of science has always depended upon free inquiry. The inheritance of acquired characteristics, and other doctrines that the Russians now set forth as the official party line, have had their proponents in America; some non-geneticists still hold to these ancient opinions. Nevertheless, they are allowed to investigate or philosophize, and they have a hearing.

"In Russia, on the other hand, geneticists are being rooted out as dangerous, bourgeois, reactionary, idealist, fascist, regard-

less of their political views, simply because they, like geneticists everywhere else in the world, know and accept the facts of experimental breeding and microscopic observation which Russian politics has branded false.

"It is of the utmost importance for the preservation of free inquiry in that part of the world where it still exists that these facts be known and fully appreciated."

The statement concludes with three propositions:

"1. The conclusions of Lysenko and his group regarding the inheritance of adaptive responses in higher organisms have no support in scientific fact.

"2. Genetic researches definitely support the reality of the gene and the validity of Mendel's laws. They do not support the official Communist claim that Mendelian heredity is an illusion, and any attempts on the part of Russian proponents of the Lysenko doctrines to bolster their case by citations from the works or conclusions of Western scientists are gross distortions of the meaning and intent of these scientists.

"3. We condemn the action of the Soviet government in presuming to banish a firmly established science from its schools, publishing houses, and research laboratories, and in persecuting scientists because their field of inquiry is distasteful to the government."

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PSYCHOLOGY

Soviet Vision Aids Fail

► ANOTHER Russian claim has failed of confirmation in American laboratories.

If you need to see better in the darkness of night, it won't help you a bit, it seems, if you sniff oil of wintergreen, listen to an alarm clock, or do bicycle exercises. Better stick to your red goggles for dark adaptation.

During the war, reports came through from Russian laboratories to the effect that light physical exercise could serve to reduce the time necessary to adapt the eye to darkness from the customary 25 to 45 minutes to only five or six minutes. And that stimulating the other senses—hearing, smell, taste, or the skin senses—would make the dark-adapted eye more sensitive. This was, of course, of great importance to the soldier or sailor in combat.

But details of the Russian research, as reported to the British journal, NATURE,

and other organs available to the Western world, were extremely skimpy. Dr. A. Chapanis, of the Johns Hopkins University, tried to get the information in 1943 through military and diplomatic channels. But his attempts met with no success. In December, 1947, he tried to communicate directly with the Russian scientist who reported the "discovery," Dr. K. Kekcheyev, but the letter was returned unopened from Moscow.

Experiments to test the claim were conducted at the Aero Medical Laboratory, Wright Field, Dayton, O., and are reported in the JOURNAL OF EXPERIMENTAL PSYCHOLOGY (Aug.), by Drs. Chapanis, R. O. Rouse, and Stanley Schachter of Johns Hopkins, Williams College, and the University of Michigan.

Six persons were tested for the length of time necessary to adapt their eyes for dark vision. Two were given oil of wintergreen

to smell. This is an odor used for testing for leaks in oxygen masks and is "rather strong and pungent" but not offensive. They were also timed for dark adaptation without it. Another pair listened to a 1,000-cycle tone of about 50-decibel intensity. They were timed with and without the noise. The third pair were required to ride a bicycle ergometer, which "can best be described as a very light exercise." The tests provided "no evidence that any of the stimuli used either facilitated or inhibited dark adaptation."

In another experiment, the individuals tested tried to read a test chart under dim illumination. Pressure of a heavy weight or a light weight on the back of the hand, or exposure to either a loud sound or a weak one produced no change in the ability of those tested to read the chart.

The third experiment tested ability to make out the form of objects under very dim illumination. The subjects were first dark adapted by use of red goggles. Again neither an odor, this time of eugenol derived from cloves or cinnamon, the sound of a buzzer, the taste of a slice of lime, nor light exercise squeezing a hand dynamometer, was of any help in making out the shape of the dimly-lighted objects.

Science News Letter, August 6, 1949

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ENTOMOLOGY

NATURE RAMBLINGS

by Frank Thone



Unreliable Prophets

► CRRRRRRRRREEEE-areeee-areeeeeeee! The file-edged song sounds through the heat-drowsy summer afternoon. And Creeee-aree-areeeeeeee! comes the answer from another tree, and another and another.

"Locusts singing," say the weather-wise acres, "Only six weeks till frost now."

For inaccuracy, that statement comes close to taking the prize. Call it song if you will; that's a matter of taste, more or less. But the singers are not locusts; they are



Working near absolute zero? White potentiometer can help

In the U. of Pitt.'s cryogenic research, temperatures down as low as 10 K are determined accurately.

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cicadas, or harvest flies. Real locusts are big, flying grasshoppers, and these August-afternoon chanters are related to grasshoppers only insofar as they are insects. They belong to an entirely different family, being more closely akin to squash-bugs, giant water-bugs and the like. They are first cousins of the seventeen-year cicada—also often miscalled a locust.

As for their forecast of first frost, that may be set down to heat-weary wishful thinking. Cicadas sound off just as the summer heat reaches its peak, and the prospect of a good solid chill, even six weeks away, seems to give some relief just through thinking of it. However, it's usually considerably more than six weeks till frost, after you hear your first cicada. The first shrilling of this insect was noted in the vicinity of Washington, D. C., this year about the first of July; and anybody

who expects frost in the Capital's suburbs by mid-August just doesn't know his Washington summers, that's all.

The seventeen-year cicada has been thrust into an equally false role as a prophet because of a peculiar W-shaped marking in the venation of each wing. Superstitious folk who see this insect at most two or three times in their lives take this to be a portent of immediate war.

The joker here is that while the seventeen-year cicada turns up in any given place only once in that many years, there are seventeen swarms or broods of the species, so that somewhere in the country there is a chance to see those W-marked wings every year. But then, this is an unquiet planet, and there is usually some kind of a fight going on, somewhere. So the cicada's reputation is at least partly salvaged.

Science News Letter, August 6, 1949

CHEMISTRY

Improve Leather Tanning

► IMPROVEMENT in leather tanning with synthetic chemicals in what is known as the dialdehyde-resin process was recently reported by A. H. Winheim, of the Planetary Chemical Company of Creve Coeur, Mo., and E. E. Doherty of Bona Allen, Inc., Buford, Ga. The process was first announced about a year ago.

In this process, the prepared hide is first treated with a compound of the dialdehyde type, such as the chemical, glyoxal, which is used in making resins, and then with resin-forming agents such as urea or phenol (carbolic acid), or with combinations of these substances and formaldehyde. The rigidity which might result from the process is prevented by the addition of a checking agent.

Investigations recently made eliminate some of the commercial "bugs" in the process, according to Messrs. Winheim and Doherty. Among improvements are the more satisfactory method of acidification of the resin-forming monomers, and the simpler control of flexibility of the leather even when cheap urea-aldehyde resins are employed.

In describing the process, the discoverers stated that the hides are tanned with glyoxal or other dialdehydes, or certain bi-functional compounds. One of the aldehyde groups attaches itself chemically to the protein in the hide, the other remaining free to react with certain resin-forming compounds under suitable conditions.

The proposed and most likely commercially-desirable resin treatment, they continued, involves the use of urea-formaldehyde mixtures or prepolymers slightly deficient in formaldehyde. Employment of a ratio of one-to-five of monoalkyl amine to urea yields leathers of greatly improved flexibility without loss of the highly desired

"fullness" and "firmness" sought by the tanner.

Science News Letter, August 6, 1949

GENERAL SCIENCE

Suggest Way To Improve Clearance Procedures

► TWO WAYS in which scientists can help "raise the level of the confidential reports on which clearance decisions are based" were offered.

Scientists who are questioned about neighbors, friends or colleagues should state that they are willing to testify if necessary, and they should prepare a signed, written statement of the information for the investigating agency.

The suggestions were made in a letter to the magazine, PHYSICS TODAY (August), by a Princeton astronomer, Dr. Lyman Spitzer, Jr., as chairman of the Scientists' Committee on Loyalty Problems.

Dr. Spitzer explained that information gathered in loyalty and security clearance investigations is collected in a confidential dossier. The sources of the information are often anonymous or known to only a few officials, he points out.

"It is obvious that these unacknowledged statements can cause serious misunderstanding which cannot easily be clarified, especially in cases where the clearance status meets with difficulties," the letter warns.

By following the suggestions, scientists can help this situation, it is proposed.

Members of the Committee which has been studying loyalty and security clearance procedures include Dr. Albert Einstein.

Science News Letter, August 6, 1949

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W. Washington 6, D. C. Ask for free publications direct from issuing organizations.

THE ARTS AND THEIR INTERRELATIONS—A Survey of the Arts and an Outline of Comparative Aesthetics—Thomas Munro—*Liberal Arts*, 559 p., \$7.50. Attempts an answer to the question "What is Art?"

AN AUSTRALIAN ANIMAL BOOK—Charles Barrett—*Oxford University Press*, 374 p., illus., \$4.50. An account of wild animal life in Australia. There are 17 color plates and 48 pages of pictures taken from photographs. A reference work useful to both the professional man and the layman.

AUTOMOTIVE TRANSPORTATION: Trends and Problems—Wilfred Owen—*Brookings Institution*, 154 p., illus., \$2.00. An examination of the cost and quality and an analysis of past trends and possibilities for the future.

BASIC COLLEGE PHYSICS—Henry A. Perkins—*Prentice-Hall*, 605 p., illus., \$6.35. Based largely on the unabridged text of *College Physics*, this is a somewhat shorter and simplified version. Particularly adapted to the needs of the non-technical student.

CORALS OF THE DEVONIAN TRAVERSE GROUP OF MICHIGAN: Part I, *Spongophyllum*—George M. Ehlers and Erwin C. Stumm—*University of Michigan Press*, illus., paper, 30 cents.

EXPERIMENTAL PSYCHOLOGY: An Introduction—Leo Postman and James P. Egan—*Harper*, 520 p., illus., \$4.50. A text for the student who already has some knowledge of general psychology. Outlines for thirty experiments suitable for training in methods of collecting experimental data are included.

FEDERAL INFORMATION CONTROLS IN PEACETIME—Robert E. Summers, Compiler—*H. W. Wilson*, 301 p., \$1.50. Presents the various issues and problems involved. Included is a resume of the facts in the Condon case and FBI loyalty investigation procedure.

GEOLOGY: Principles and Processes—William H. Emmons and others—*McGraw-Hill*, 3rd ed., 502 p., illus., \$4.50. This edition pays increased attention to the topography of the "tidewater lands," and has many new and improved illustrations. References to source literature are brought completely up to date. A text for the first course in the field.

IRON EXCHANGE: Theory and Application—Frederick C. Nachod, Ed.—*Academic*, 411 p., illus., \$8.80. A treatise written by some of the foremost experts in the country covering a large part of the field.

LIFE HISTORIES OF NORTH AMERICAN THRUSHES, KINGLTS, AND THEIR ALLIES—Arthur Cleveland Bent—*Gov't Printing Office*, 454 p., illus., \$1.50. A detailed study of these species and their best known sub-species. The seventeenth of a series on the life history of North American birds.

THE COLLOID CHEMISTRY OF THE SILICATE MINERALS—C. Edmund Marshall—*Academic*, 195 p., illus., \$5.80. Volume one of a series of monographs prepared under the auspices of the American Society of Agronomy.

NEW UNCOILED GASTROPODS FROM THE MIDDLE DEVONIAN OF MICHIGAN AND MANITOBA—Aurele La Rocque—*University of Michigan Press*, illus., paper, 30 cents.

REFLECTIONS ON OUR AGE—Emmanuel Mounier and others—*Columbia University Press*, 346 p., \$4.50. These are the lectures which

formed the background to UNESCO's first conference in 1946. They are written by 22 internationally recognized writers, teachers, philosophers, scientists and others.

REPORT OF THE COMMITTEE ON THE MEASUREMENT OF GEOLOGIC TIME 1947-1948—John Putnam Marble, Chairman—*National Research Council*, 77 p., paper, \$1.00. Includes reviews of the work being done in such countries as Scotland, Spain, and Japan, and an annotated bibliography of articles relating to the measurement of geologic time.

Science News Letter, August 6, 1949

ENTOMOLOGY

Radioactivity Induced in Mosquitoes To Study Habits

► NOW it's "hot" mosquitoes. The buzzing, biting pests can be made radioactive, so that their flight and attack habits can be studied even in the dark by the way they make Geiger counters tick.

Technique for doing this was developed by two Army medical researchers, Drs. C. C. Hassett and D. W. Jenkins, at the Army Chemical Center in Maryland. The process is quite simple: you just rear your mosquito larvae in water containing a few parts per million of a suitable radioactive chemical. Drs. Hassett and Jenkins used radioactive sodium phosphate, largely because of the convenient 14.3-day half-life of the isotope, and because radioactive phosphorus is not poisonous.

Details of their experiment are reported in SCIENCE (July 29).

Science News Letter, August 6, 1949

ENGINEERING

Silent Engine-Generator Made for Military Uses

► ENGINE-GENERATOR set, so quiet that it can scarcely be heard 300 feet away, was revealed by the U. S. Army Engineer Research and Development Laboratories at Fort Belvoir, Va., where it was designed and constructed. Its silence is due largely to a glass-wool-lined box in which it is enclosed.

Noise-making equipment in forward positions in time of war is easily detected and spotted by enemy apparatus. The new engine-generator and its near sound-proof box was developed to meet this situation. On a typical, quiet summer evening, this set has an audible range of 325 feet from the rear, or exhaust side, and 200 feet from the front. The silencer box weighs 93 pounds.

The box itself is of aluminum. Its circuitous air intake and exhaust ducts are lined with one inch of glass fiber cemented

to the walls. The interior of the box has a two-inch lining of the same material. Ventilation is assured by the design of the ducts. All the air entering the box is dispelled over the cooling fins of the engine. There is no air recirculation, and the efficiency of the unit is not measurably affected by the housing. The generator used is a 1.5 kilowatt unit.

Science News Letter, August 6, 1949

Words in Science— TURBOJET-TURBOPROP

► MANY of the fast planes of today and tomorrow are or will be powered by turbojet or turboprops or both.

In the turbojet engine compressed air is forced into combustion chambers. There fuel is added, usually kerosene. It burns, creating high-pressure gases, some of which operate the compressor to supply air for burning but most of which pass out the jet exhaust, giving the propulsion.

The turboprop is a somewhat similar device but all the gases created are used to expand through vanes or buckets on a shaft and give high rotation to the shaft, which in turn drive conventional propellers.

Science News Letter, August 6, 1949

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• **PICNIC BASKET** will keep a supply of bottled drinks, salad, and dairy products chilled for hours, or can be used to keep hot foods at almost oven temperature. It is made of glass fiber insulation sealed in plastic. It is 10-quart size, and the plastic is resistant to food stains and marks of outdoor use.

Science News Letter, August 6, 1949

• **MOTH-REPELLING** coating for storage space walls comes in a powder which, in use, is mixed with water to form a paste, and is applied with a paint brush to form a layer as thick as a penny. It dries in an hour and is relatively permanent. It is made of ingredients of the cedar tree and a powdered plastic binder.

Science News Letter, August 6, 1949

• **FOLDING SAWHORSE**, recently patented, has four pivoted legs that fold under the top and side rails of the device when not in use. The side rails, on rigid brackets, slope downward and outward, thus giving the legs pivoted to them the proper spread when the horse is unfolded for use.

Science News Letter, August 6, 1949

• **OIL DRAINER** for the automobile removes the oil and sludge by means of an injector tube inserted into the oil-filling



opening, thus eliminating the commonly used method of draining the tank from under the car. The 20-pound portable device, shown in the picture, works on ordinary air pressure.

Science News Letter, August 6, 1949

• **GOLF PUTTER** has the ordinary head but it is formed with two leg-like parts.

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one on each end, that keeps the striking part away from the ground so that the ball is struck above its vertical center. This recently patented device makes the ball hug the green as it approaches the hole.

Science News Letter, August 6, 1949

• **DISH-WASHING** aprons for men are made of plastic and never need laundering because they can be easily cleaned with a damp cloth. They are available in a variety of humorous designs such as "Little Butch" and "My Achin' Bacon."

Science News Letter, August 6, 1949

• **ELECTRONIC** safety starter, that eliminates the danger of transformer burn-outs in fluorescent lamp fixtures, is a highly intricate thermal relay that automatically switches off the current if the lamp is defective and does not light in 30 seconds.

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• **COAL-DUST EXPLOSION** gallery, small and portable and designed to show how a cloud of coal dust will explode if ignited by a spark of flame, can also be used to demonstrate the hazard of dust in industrial plants from flour, cocoa, sawdust and other materials. It utilizes electricity to explode the dust in a 10-inch-long transparent plastic tube.

Science News Letter, August 6, 1949

Do You Know?

Of approximately 800 tree species native to the United States, only about 90 attain commercial size and quality.

A massive German-built concrete *U-boat* shelter in Norway is now used as a factory; windows had to be cut through its 10-foot-thick bomb-proof walls.

Arthur Pitney is credited with originating the *stamping machines* now widely used in business offices which save the use of ordinary postage stamps.

The American *puddlefish*, rare but found in Midwestern rivers, has a spatulated snout about one-third of its total length, and it gathers food by swimming up stream with its big mouth open to gather in microscopic animals and plants.

A new office building in Boston has 16 electric moving stairways, two between each floor to carry passengers up or down; the unique feature is that they can all be operated to carry passengers in the same direction during rush hours.

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